

STELLA-2 Build instructions

20221218

Steps 00 through 09: Consult the wiring list, CAD images, and photos. Place wires by color, as specified. Solder the wires to the protoboard, then trim the remaining ends of the wires.

Step 10: Use desoldering braid to remove the solder from the JP1 jumper set on the front of the NIR sensor board. Add solder to the JP2 jumper on the back of the NIR sensor board.

Step 11: Cut header pin segments to length, to match the hole patterns in the sensor boards. Press these header pin segments into the breadboard at the locations specified in the wiring list. Place the protoboard over the breadboard so that the pins poke through the protoboard at the correct locations. Solder the pins to the protoboard.

Step 12: On the back of the protoboard, place the sensors on the header pins, in the orientations shown in the images. Solder the pins to the sensor boards. Bend the wires of the TIR sensor to fit the holes in the TIR sensor holder, then insert the wires into the protoboard at the locations specified in the wiring list. Press the sensor so it sits flat to the board, then solder the sensor wires. Trim off the excess sensor wire ends.

Step 13: Bend the LED leads as in the photo. Place and solder the discrete components as specified in the wiring list.

Step 14: Locate the SDCS circuit trace on the Adalogger board. With a sharp knife, trim away the circuit trace between the pads. Add a segment of wire to reroute the SDCS line as shown in the images, then solder the wire into the holes, and trim off the excess wire ends. Break pin header segments to 16 and 12 lengths, and press them into the breadboard so that they line up with the outer hole patterns of the Adalogger. Align the Adalogger on the pins, then solder the pins to the board. Remove the completed Adalogger from the breadboard.

Step 15/16: (There's a numbering error between the photos and the CAD images). Slide the stacking headers onto the pins on the back of the Adalogger board. Select the Feather Sense nRF52840 microcontroller, and place it on the long pins of the stacking headers. Solder the pins to the microcontroller board. Place the feather spacer on the back of the microcontroller. Refer to the wiring list; insert the microcontroller stack assembly into the specified holes in the protoboard. Holding the assembly flat, solder the pins onto the protoboard. Trim off the remaining length of the pins.

Finish up: Remove the Adalogger, connect the main battery, then nestle the battery in between the headers on top of the microcontroller. The carefully reinstall the Adalogger over the microcontroller and battery. Install the coin cell battery, and insert the micro SD card.

Housing: Slide the completed STELLA-2 into the lower housing, then slide the upper housing on along the rails of the lower housing.

Step 21: Optional. Install the connector for the wired remote pushbutton, in the locations specified in the wiring list. The pin pitch of the connector is narrower than the hole pitch of the protoboard, so it takes careful alignment and a bit of force to seat the connector. Solder the pins.